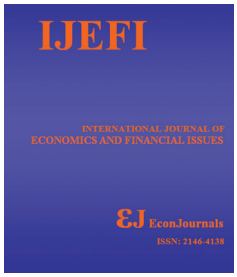


International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2016, 6(2), 538-543.

The Interactional Impact of Defense Expenditure and Arms Importation on Economic Growth in Nigeria: An Autoregressive Approach

Muhammed Umar Aminu[1,2]*, Abu Sufian Abu Bakar[3]

[1]Nigerian Army School of Education, Ilorin, Nigeria, [2]School of Economics, Finance and Banking, University Utara Malaysia, Kedah, Malaysia, [3]School of Economics, Finance and Banking, University Utara Malaysia, Kedah, Malaysia. *Email: alaminarg227@gmail.com

ABSTRACT

Little is done on the empirical analyses of the impact of defense expenditure on arms and economic growth. The few conducted concentrated on developed countries, which are exporters of arms. This study examines the short-run and long-run impact of arms importation on the economic growth in Nigeria, using autoregressive distributed lag model. Literature on defense expenditure and economic growth are often conflicting and inconclusive. These outcomes are due to the non-linear growth effects of defense and incorrect model specifications. The crucial growth effects of defense expenditure can be traced by properly controlling the interaction term. This paper examines the defense-arms interaction on Nigeria in the context of Aizeiman and Glick (2006) models. The result reveals that defense-arms interaction in Nigeria exerts negatively on the economic growth. It therefore recommends that defense R and D as well Defense Industrial Cooperation of Nigeria should be properly financed and managed for efficiency and self-reliability.

Keywords: Defense Expenditure, Arms Importation, Economic Growth
JEL Classification: H5, H56, H57, Q36

1. INTRODUCTION

Volume of researches are conducted on the economic effects of defense expenditure on growth. The economic impacts of arms production and importation as well as trade continue to be quite unexplored especially in the developing countries like Nigeria. Big economies today spend much on defense and export more arms. While developing countries spend less on defense and imports more arms. Arms purchases are not cheap, in fact some countries have to alternate to external borrowing in order to pay for arms importation or use significant portion of their defense budget in general. Of course, foreign borrowing does not necessarily lead to slower economic growth, but might even increase economic activities (Yakovlev, 2007). Nonetheless, if the borrowed funds are spent on arms imports instead of investments on goods that are essential for self-sustaining growth, then the effect of external borrowing on growth would likely be negative. On the contrary, arms imports may help importing countries transfer new technology through the necessary trainings of defense personnel as required for operating high-tech weaponry and attach systems. In some cases, arms imports may result to bilateral technological transfers if they take a form of a licensed production of defense ordinances.

2. ARMS PROCUREMENT IN NIGERIA

Nigerian established Defense Industrial Corporation (DICON) aiming to "operate the ordnance factories for the manufacture and supply of arms and ammunition as well as inspecting, testing and recommending ordnance materials for the Armed Forces and other security organizations while using the excess capacity to support the development of local industries." Despite the fact that DICON was established for this purpose of making Nigeria self-sustaining in arms and ammunition, still Nigeria defends on the foreign sources. This has brought a desperation and over reliance on the foreign economies (Magbadelo, 2012). In September 2014 $9.34 million meant for the arms procurement from Nigeria was seized

by the South African authority. Two Nigerians and a foreigner (an Israeli) on behalf of the Nigerian government travelling with the plane's crew with the said amount of money were arrested and detained by the South African government. For what the South African authorities claimed non-declaration of the funds in question while in South Africa. Such action has tarnished the image of Nigeria in the eyes of the world. The Nigerian government in 2014 borrowed $1 billion US to procure additional arms and ammunitions in its fight against Boko Haram. That was an addition on what was already budgeted for defense (The Nation, 2015).

It is on this note this study examines the effects as well as the magnitude of the defense arms importation on economic growth in Nigeria both in the short-run as well as the long-run. Subsequently the study gives policy recommendations base on the findings. The subsequent sections are arrange in five headings. Section two presents a brief history on arms procurement in Nigeria. Section three reviews both the empirical as well as the theoretical literature. Section four describes the methodology and the data used in the study. Section five presents the empirical result. Lastly section six presents the conclusion and the recommendations.

3. EMPIRICAL AND THEORETICAL LITERATURE REVIEW

Arms importation has both positive and negative impacts on growth. In a case arms importation helps importing countries transfer new technologies through the necessary training of personnel, then importation may have positive impact on growth. Where the scarce resources are spent on the arms importation instead of investing on goods that are essential for self-sustaining growth, the effect of such expenditure on growth may likely be negative. Ando (2009) reveals that domestic defense industries in countries that import arms tend to exhibits a positive economic impact. Although developing countries have no choice but to import arms, the study suggests that defense outlay for this countries has a positive effect on their economies if consider the internal threats, only by excluding arms imports. Additionally (Lai et al., 2002) added that defense R and D experiences and imitations generated due to arm importations have positive impacts on private productions. On the contrary Looney (1989) investigates how expenditure on defense and arms imports affect debt in resource-constrained countries and unconstrained countries. His findings revealed that arms imports tends to be a significant contributor to third world indebtedness. Another empirical study by Looney and Frederiksen (1986) revealed that the unconstrained developing countries are able to support higher level of arms imports. Günlük and Sezgin (2002) find that the growth in arms imports has a significant positive effect on external debt, while no such effect is found for the growth in defense spending.

Theoretically for any empirical study, there must be a theory that establish its argument. For the impact of defense activities on the economic growth, this is very unclear to the fact that the main economic theories do not have an explicit role of defense as a distinctive economic activity. The classical and neoclassical economics recognize defense spending as purely public and exclusively provided by the state. Though necessary, but of course has security benefit and opportunity cost. For this therefore, assessment of some theoretical positions regarding defense expenditure is very necessary. This study uses three theories to establish its theoretical bases.

3.1. Keynesian

The Keynesian see a proactive state which uses defense expenditure as one aspect of state spending to stimulate output through multiplier effects in the existence of ineffective aggregate demand. In this way increased defense expenditure can lead to increased capacity utilization, increased profits, saving and hence increased investment and therefore increase growth (Stewart, 1991). This argument has been criticized for its failure to address supply side issues, this led to many researchers to include explicit production functions in their Keynesian models (Deger and Smith, 1983). On the other hand neoclassicals see a state as a rational actor that balances the opportunity costs and security benefits of defense expenditure in order to exploit a well-defined national interest. To neoclassicals defense is a pure public good and the economic effects of defense expenditure is determined by its opportunity cost, as well as the trade-off between defense and other spending. This approach has the benefit of allowing the development of formal models for the empirical analysis. However, one of it weaknesses is that, it a historic, it concentrates on the supply side, ignoring the internal role of defense and defense interests, The most influential neoclassical model is Biswas and Ram (1986), developed from Feder (1983).

Further the new-classical employ defense expenditure as an important shock to the economy, which has dynamic real effects on output. The theory differed from the neoclassical theorists in the sense that it gave support to the argument that fiscal policies enhance economic growth. The effect of government expenditure in the new growth models is endogenized as it has tax implications and income-generating effects. The theorists seek to explain the size of the rate of growth of gross domestic product (GDP) that is left unexplained and exogenously resolute in the Solow neoclassical growth equation. The theory assumes that public and private spending on human capital generates external economies and productivity developments that offset the natural tendency for diminishing returns, endogenous growth theory seeks to explain the existence of increasing returns-to-scale and the divergent long-term growth patterns among countries (Todaro and Smith, 2003). Assuming increasing returns-to-scale implies that both the impact of physical capital and human capital would be larger than the one suggested by Solow. Another implication is that economies with increasing returns-to-scale do not necessarily reach a steady level of income as in the Solow framework. If the externalities from new investments are significant, diminishing proceeds to capital do not necessarily set in, so growth rates do not slow and the budget does not necessarily reach a steady state (Todaro and Smith, 2003). The new growth theory therefore, argue that defense expenditure like all other public expenditure can generates positive externalities that affect efficiency parameters on the factor input (Labor and Capital) which have stimulating impact on output. Security from both external and internal threats stimulates and environment that stimulates investment by both foreign and domestic investors.

4. METHODOLOGY AND DATA

Data on defence expenditure, GDP, arms importation, school enrolment, capital formation, population growth rate are sourced from the world development indicators and Stockholm International Peace Research Institute. Spanning from the first quarter of 1984 to the last quarter of 2014.

4.1. Model Specification

4.1.1. Barro growth model

Aizeiman and Glick (2006), Yakovlev (2007) and Araujo and Shikida (2008) conclude that the mainstream models of growth like that of Solow and Barro are more suitable in analyzing defense-growth issues. The models depict non-linear effects on growth using interaction between growth enhancing and tax distorting impacts of government expenditure. The theory suggests variables should be unrestricted in a growth regression. Same approach is adopted in this study to examine the joint impact of arms trade and defense expenditure on growth. The basic growth equation specification is as follows:

$$gy_t = \alpha_0 + a_1 de_t + a_2 AI_t + a_3 de_t * AI_t + \beta X_t + \mu \quad (1)$$

Where, *gy* is gross domestic product it is used as proxy for growth, *DE* is defense expenditure as a ratio of GDP, *AI* denotes arms importation, while *AI*de* is the interactive term between arms importation and defense expenditure X_t = Vector of control variables (education proxy using school enrolment, population growth, Investment proxy using capital formation).

4.2. The Autoregressive Distributed Lag (ARDL) Estimation Procedure

For the interactional relationship between defense arms procurement and economic growth, in the short-run and the long-run, Pesaran and Shin's (2001) model of ARDL is used in this study. The model examines the long-run relationship, irrespective of the variables stationarity, different or fractionally integrated (Bahmani-Oskooee and Ng, 2002). The model gurantees efficient and unbiased estimation even if the sample size employed is small (Narayan, 2005). The following steps are followed in the estimation process of the ARDL model.

4.2.1. Unit root test

The ARDL framework does not necessarily requires the variables to be tested for unit root at the same time, but necessary for testing for the order of integration and essential to determine whether ARDL approach is suitable or not (Pesaran and Shin, 1998). The augmented Dikey–Fuller (ADF) test is conducted on three different equations specified below:

$$\Delta Y_t = \delta + \varpi t + \vartheta y_{t-1} + \sum_{i=1}^{k} \beta \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta Y_t = \delta + \vartheta y_{t-1} + \sum_{i=1}^{k} \beta \Delta Y_{t-i} + \varepsilon_t \quad (3)$$

$$\Delta Y_t = \vartheta y_{t-1} + \sum_{i=1}^{k} \beta \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

Where, Δ depicts the first difference, Y_t is the series under test, δ is the intercept term, *t* is the time trend, Y_{t-1} is the lag variable being tested, *k* denotes lag length, ΔY_{t-1} means first difference lagged series usually taken to eliminate the problem of serial correlation (Dickey and Fuller, 1979) and ε is the white noise process with $\varepsilon_t \sim iid(0,\sigma^2)$. The term *k* in this test is automatically determined by Schwarz information criterion or Akaike information criterion to get the optimal lag length and ensure white noise process of the residual ε.

4.2.2. ARDL bounds testing approach

The cointegration among the variables specified would be examined using ARDL model developed by Pesaran et al. (2001) as shown below:

$$\Delta \ln y_{it} = \beta_0 + \sum_{i=1}^{j} \omega_i \Delta \ln x_{it-i} + \sum_{j=1}^{k} \delta_j \ln x_{it-1} + \mu_{it} \quad (5)$$

Where, *lny*, is a vector of endogenous variables defined under section 1.1 (defence expenditure and economic growth model). $i = (1,2,\ldots,7)$ and $j = (1,2,\ldots,7)$. The symbol Δ, is the difference operator. The long-run relationship between the variables is determined by the joint significance test of the following hypothesis: $\delta_1=\delta_2=\delta_3=\delta_4=\delta_5=\delta_6=\delta_7=0$. If the upper bound critical value falls below the calculated F-statistic values, the null hypotheses of no relationship are rejected, and co-integration exists among the variables that give the opportunity to estimate both long- and short-run coefficients. The null hypotheses cannot be dismissed if the lower bound is above the F-statistic. Furthermore, co-integration can only be determined using other methods if the F-statistic falls between the asymptotic lower and upper critical values. However, Narayan (2005); and Dahalan and Jayaraman (2006) argued that the critical values generated by Pesaran and Pesaran (1997); and Pesaran et al. (2001) are for large sample size observations. Therefore, to avoid size distortion, this study will adopt a small sample size with critical values computed by Narayan (2005) for the bound testing process.

4.2.3. The long-run estimates

The long-run equation is estimated to determine the impact of the interactive effect of defense arms importation on the economic g rowth.

$$\ln y_{it} = \lambda_0 + \sum_{j=1}^{k} \lambda_j \ln x_{it-i} + \varepsilon_{it} \quad (6)$$

Where, ln represents natural log, ε_t denotes white noise process whereas *y* remains as defined under Equations (1) to (5). $i = (1,2,\ldots,7)$ and $j = (1,2,\ldots,7)$. The covariance of the coefficient estimates can only be asymptotically uncorrelated in a situation where the regressors are known to be integrated of order one without co-integration in the long-run. A dynamic error correction model (*ECM*) is estimated to determine the long-run and short-run causal relationship among the integrated variables (Engle and Granger, 1987). While the long-term dynamism is explained by the error correction term (*ECT*) which further proves the existence of long-run relationship by its significant negative value. The

short-run behavior is described by the lagged terms' individual coefficients of the estimate.

4.2.4. The short-run estimates

The short-run relationship among the series is determined using ARDL *ECT* specified in Equation (7).

$$\Delta \ln y_{it} = \beta_0 + \sum_{i=1}^{k} \beta_i \Delta \ln x_{it-i} + \varphi_i ECM_{it-1} + \varepsilon_{it} \quad (7)$$

Where $\Delta \ln y_{it}$ represent change in natural logarithm of all the variables specified in defense arms expenditure and economic growth models. The *ECM* term represents *ECT* it determines the magnitude of speed of adjustment. The *ECM* measures the effectiveness or adjustment mechanism in stabilizing disequilibrium in the model specified. In other words, it describes how disequilibrium in the model will instantaneously converge to equilibrium after a given shock in the economy. Furthermore, the negative significant coefficient of the *ECM* term is required to ensure the existence of long-run relationship and adjustment of disequilibrium in the model (Narayan, 2005). The higher the magnitude of the *ECT* term the better is the speed of adjustment. The symbol Δ denotes difference operator while the other variables were earlier explained in equations specified earlier.

5. EMPIRICAL RESULTS

5.1. Unit Root Result

The study examines the properties of the series, using ADF test. The table is made up two models; the constant without trend and constant with trend models. The result shows that all the variables less *LDE* are stationary at least at 10% significance level in the model (A). In the same way, all the variables are found stationary at least at 10% significance level with the exemption of *LEDU* in the model (B). Therefore, the unit root test rejects the null hypothesis of the non-stationarity of the series at least at 10% significant level. The result is presented in the Table 1.

5.2. Co-integration Results

Table 2 depicts the long-run co-integration result. It confirms the existence of the long-run relationship among the series. Three co-integrating vectors are gotten from the computed F-statistics for the equations of defense arms expenditure and growth. The vectors values are greater than the upper bound critical value by Narayan (2005) and Pesaran et al. (2001) at 1% and 5%.

From the Table 2, the co-integration results uphold the existence of the long-run relationship among the series. There are three co-integrating vectors from the computed F-statistics results. The three co-integrating vectors *LGDP*, *LDE***LAI* and *LINV* are greater than the upper bound critical value by Narayan (2005) and Pesaran et al. (2001) at 1% and 5%. This result provides the evidence of the existence of long-run relationship between the interactional term and the economic growth in Nigeria. Therefore, the result of the long-run equilibrium relationship between economic growth, defense expenditure and political instability in Nigeria can be further interpreted.

Table 1: ADF unit root test

Series	Constant without trend (A)		Constant with trend (B)	
	Level	First difference	Level	First difference
GDPG	−2.691**	−3.731***	−2.955	−3.733***
LDE	0.927	−2.640*	−1.008*	−2.689
LAI	−1.491	−3.945***	−1.391	−4.193***
LEDU	0.656	−2.135	−1.488	−3.494**
LPP	0.084	−2.842**	−3.699***	−2.783
LINV	−1.436	−3.795***	−1.152**	−3.993***
*LDE*AI*	0.108	−5.627***	−3.668**	−5.714***

***, ** and * represent significance level at 1%, 5% and 10% respectively. The figures are the t-statistics for testing the null hypothesis that the series has unit root. Source: Researcher's computation. ADF: Augmented Dickey-Fuller, GDP: Gross domestic product, AI: Arms importation

Table 2: ARDL bound test for co-integration relationship

Model	F-statistics	Significance level (%)	Critical bound			
			Critical A		Critical B	
			I (0)	I (1)	I (0)	I (1)
LGDP	4.497***	1	3.15	4.43	3.457	4.943
LAI	1.446	5	2.45	3.61	2.627	3.384
LDE	0.862	10	2.12	3.23	2.236	3.381
LDE_LAI	3.381**					
PPG	1.836					
LEDU	1.590					
LINV	5.599***					

***.**Represent significance at 1% and 5% respectively. The F-statistic. The critical values A and B are critical values for the F-statistics obtained from cases III for unrestricted intercept and no trend reported Pesaran et al. (2001, p. 300) and Narayan (2005, p. 1988) Source: Researcher's Computation, GDP: Gross domestic product, AI: Arms importation, ARDL: Autoregressive distributed lag

5.3. Long-run Relationship

Equation (8) shows the long-run relationship between defense expenditure-arms import interaction and economic growth. The result confirmed that *LAI* has a negative as well as significant effect on economic *GDPG* at 5%.

$$LGDPG = -2.273 - 0.944\ LAI - 1.278\ LDE - 2.395\ LDE*LAI - 0.849\ PPG + 0.715\ LEDU 0.067\ LINV \quad (8)$$

The coefficient for *LAI* −0.944 signifies that a million naira increase on *LAI* reduces *GDPG* by 0.944%. Similarly, *LDE* as well as *PPG* coefficients −1.278 and −0.849 indicates that 1% increase in DE as well as *PPG* decreases *GDPG* by 1.278% and 0.849% respectively. The result further shows that the defense-arms (*LDE***LAI*) interaction term has a significant as well as negative effect on *GDPG* at 5%. The coefficient of the interactive term −2.395 means a one million naira increase in defense arms importation leads to 2.395% decrease on *GDPG* in Nigeria.

5.4. Short-run Relationship

Table 3 offers the short-run dynamics of the regression result. The *ECM* coefficient −0.632 is statistically significant at 1%. The result shows the existence of the long-run co-integration. It equally depicts that the disequilibrium which occurs in the short-run is automatically adjusted back to the equilibrium position in the long-run. The coefficient of the *ECM* term -0.632 suggests a

Table 3: Short-run results

Dependent variable: Δln*GDP*	Coefficient	Standard error
Constant	0.2025	
$\Delta LGDP_t$	0.095**	0.082
ΔLAI_t	−0.011*	0.111
ΔLDE_t	−0.018*	0.035
$\Delta LPPG_t$	−0.045**	0.335
ΔLDE_LAI_t	0.043***	0.003
$\Delta LEDU$	0.208**	0.062
ΔKFG_t	0.031**	0.012
ΔECM_{t-1}	−0.632***	0.009

*, ** and *** represent significance at 1%, 5% and 10% respectively. The critical values are obtained from the Table 1. Unrestricted intercept and trend. Source: Researchers computations. GDP: Gross domestic product, AI: Arms importation, ARDL: Autoregressive distributed lag

Table 4: Diagnostic test

Test statistics	
χ^2 autocorrelation	0.116
χ^2 Normality	0.000
χ^2 Functional form	0.106
χ^2 Heteroskedasticity	0.150
Ramsey test	0.432

Source: Author's computations

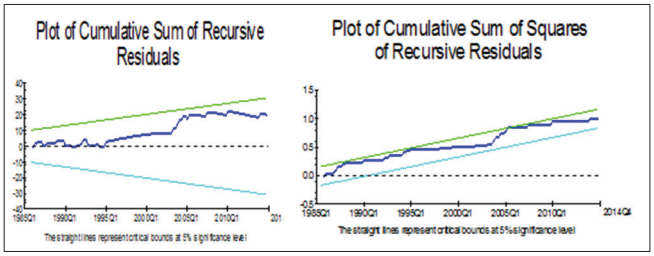
high speed of adjustment of 63%. Meaning, the previous period disequilibrium reverses back to the long-run equilibrium in a current period equilibrium position. However, the coefficient of the Δ*LAI* −0.011, shows 1% increase in Δ*LAI* leads to 0.011% decrease of the *GDPG*. Moreover the coefficient of Δ*DE* −0.018 signifies a million naira increase defense retards Δ*GDPG* by 0.018%. Similarly the interaction term (Δ*LDE***LAI*) has significant and negative effect on Δ*GDPG* at 1%. The coefficient −0.043 shows that a million naira increase in defense expenditure on arms import affects negatively the economic growth in Nigeria by 0.043%. On the contrary, Δ*EDU* and Δ*INV* possesses positive signs with coefficient 0.208 and 0.031 depicting increase in education as well as investment raises economic growth by 0.208% and 0.031% respectively. This is in line with the previous findings (Apanisile and Okunlola, 2014; Umar and Bakar, 2015).

Table 4 shows that the long-run model has passed the diagnostic tests. The null hypothesis of no serial correlation, non-normality of the distribution of the residual, functional form mis-specification as well as homoscedasticity are not rejected. The statistical result shows that the null hypotheses are accepted. This is further verified by cumulative sum (CUSUM) and the CUSUM square (CUSUMQ) test. This stability test result revelled that the series are within the critical bound at 5% significant level. Therefore it confirms the stability of the model over time. The CUSUM and CUSUMQ graphs are presented in Figure 1.

6. CONCLUSIONS AND RECOMMENDATIONS

This paper examines the impact of the defense arms importation on the Nigeria's economics growth. The finding reveals that the impact of defense-arms interaction on economic growth in Nigeria has exerts negative impact on the economic growth.

Figure 1: Plot of cumulative sum statistics for stability test



Source: MICRO FIT 4.1

Moreover, high arms importation can mounts more pressure on the government, therefore a considerable extent of social services funding will go for importation of arms importation.

The study recommends that defense R and D in Nigeria has to be properly financed and managed for efficiency and self-reliability. There is a need for more efficient, sound management and sufficient financing for DICON, and other defense institutions and collaborations. Training and doctrine should to be made a defense tri-service institution, and a center for defense R and D.

REFERENCES

Aizenman, J., Glick, R. (2006), Military expenditure, threats and growth. Journal of International Trade and Economic Development, 15(2), 129-155.

Ando, S. (2009), The impact of defence expenditure on the economic growth: Panel data analysis based on the Feder model. The International Journal of Economic Policy Studies, 4(8), 141-154.

Apanisile, O.T., Okunlola, O.C. (2014), An empirical analysis of effects of military spending on economic growth in Nigeria: A bound testing approach to co-integration 1989-2013. Journal of Public Administration, Finance and Law, 3(6), 117-130.

Araujo, A.F.D. Jr, Shikida, C.D. (2008), Military expenditures, external threats and economic growth. Economics Bulletin, 15(16), 1-7.

Bahmani-Oskooee, M., Ng, R.C.W. (2002), Long-run demand for money in Hong Kong: An application of the ARDL model. International Journal of Business and Economics, 1(2), 147-155.

Biswas, B., Ram, R. (1986), Military expenditures and economic growth in less developed countries: An augmented model and further evidence. Economic Development and Cultural Change, 34(2), 361-372.

Dahalan, J., Jayaraman, T.K. (2006), Monetary and fiscal policies in Fiji: A test of effectiveness. Pacific Economic Bulletin, 21(2), 94-102.

Deger, S., Smith, R. (1983), Military expenditure and growth in less developed countries. Journal of Conflict Resolution, 27(2), 335-353.

Dickey, D.A., Fuller, W.A. (1979), Distribution of the estimators for autoregressive time series with a unit root. Journal of the American Statistical Association, 74(366a), 427-431.

Engle, R., Granger, W.J. (1987), Co-integration and error correction: Representation, estimation and testing. Econometrica, 55(2), 251-276.

Feder, G. (1983), On exports and economic growth. Journal of Development Economics, 12, 59-73.

Günlük, S.G., Sezgin, S. (2002), Turkey's defence expenditures and debt burden. Sixth Annual Middlesex Conference on Economics and Security, London; 21-22 June, 2002.

Lai, C.C., Shieh, J.Y., Chang, W.Y. (2002), Endogenous growth and

defence expenditures: A new explanation of the Benoit hypothesis. Defence and Peace Economics, 13(3), 179-186.
Looney, R.E. (1989), The influence of arms imports on third world debt. The Journal of Developing Areas, 23(1), 221-232.
Looney, R.E., Frederiksen, P.C. (1986), Defence expenditures, external public debt and growth in developing countries. Journal of Peace Research, 23(4), 329-337.
Magbadelo, J.O. (2012), Defence transformation in Nigeria a critical issue for national security concerns. India Quarterly: A Journal of International Affairs, 68(3), 251-266.
Narayan, P.K. (2005), The savings and investment nexus for China: Evidence from cointegration tests. Applied Economics, 37, 1979-1990.
Pesaran, M.H., Pesaran, B. (1997), Working with Microfit 4.0: Interactive Econometric Analysis. Oxford: Oxford University Press.
Pesaran, M.H., Shin, Y., Smith, R.J. (2001), Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289-326.
Pesaran, M.H., Shin, Y. (1998), An autoregressive distributed-lag modelling approach to cointegration analysis. Econometric Society Monographs, 31, 371-413.
Stewart, F. (1991), Are adjustment policies in Africa consistent with long-run developed needs? Development Policy Review, 9(4), 413-436.
The Nation Newspaper, 25 September 2015. Arms Deal: Fresh Controversy Over $1 bn Loan Approved for Jonathan.
Todaro, M., Smith, S. (2003), Economic Development. Singapore: Pearson Education.
Umar, M.A., Bakar, A. (2015), Economic growth defence expenditure and threats in Nigeria 1980-2013: Bound co-integration analysis. Journal of International Business Management, 9(5), 784-790.
Yakovlev, P. (2007), The arms trade, military spending, and economic growth. Defence and Peace Economics, 18(4), 317-338.